

## PETER'S MEDICINE—LESSONS FROM THE 13TH CENTURY

WALTER J. DALY

INDIANAPOLIS, INDIANA

The Middle Ages should be known as a period of intellectual activity rather than historical glamor. It was also a period of hardship, pestilence, and violence. But it was the period of true giants such as Thomas Aquinas, who systematized religious theory. Like Anselm and Hugh of St. Victor, he even developed logical proofs for the existence of God (1). It was the period of Albertus Magnus (St. Albert the Great), who worked to reconcile much of Aristotle with Christian theology. Like Aristotle, he linked philosophy and science. It was also the period of the ruler, Frederick II, who flaunted convention, was excommunicated several times, but was reputed to foster intellectuals and the medical school at Salerno (2). And it was the period of Innocent III, perhaps the greatest leader of them all.

During this time of intellectual activity and controversy, Peter of Spain lived out a long and fruitful life as a scholar known for his works on logic, as a scholar-physician who wrote widely and was sought by his contemporaries as their doctor, and as a churchman so successful that he became Pope, John XXI. He even made it into Dante's Paradise (3), where he had a place among the scholars. Peter was not the most outstanding in any single field, though he was one of the most important medieval physicians (4); he was the only man of his time with his breadth of achievement. It is known that John XXI died in 1277. His date of birth remains unknown, perhaps as early as 1205 or as late as 1220.

Peter was probably born in Lisbon and educated there in the Cathedral School until he was sent to Paris for a university education. If he was born as early as 1205, he may have been in Paris by the early 1220's. There he studied the arts, philosophy, theology and perhaps medicine. Some have argued that he also attended the medical school in Montpellier or Salerno; indirect evidence suggests a Salernitan connection; perhaps he just visited. After leaving Paris, he traveled through southern France, Spain and Italy. It was probably in Spain

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From the Indiana University School of Medicine, Indianapolis, Indiana.

Supported: Indiana University School of Medicine

Address for reprints: Fesler Hall, Room 302, 1120 South Drive, Indianapolis, Indiana 46202-5114.

that he wrote and “published” his most famous book, the *Tractatus*, or *Summulae Logicales*. Early on, in this long treatise, he reasoned that logic is “the art of arts and the science of science, the preparation for all other sciences” (1). This work was the standard text of logic for the next several hundred years.

In 1245, he was in Siena as a Professor of Medicine. Subsequently, he had Church assignments in Spain and Portugal. In 1272, he became physician to Pope Gregory X. By 1273, he was a Cardinal and, in 1276 he was elected Pope.

Peter left us large quantities of medical material. None has been published in modern English; most remains in medieval Latin manuscripts, available only in European libraries with manuscript collections. Figure 1 is a photocopy of the Glasgow manuscript of Peter’s Eye Book (5). Other manuscripts of *De Oculis* are available in Oxford, London, Paris, Vienna, Munich, and Graz. It should not be surprising that these documents are not identical. Differences are characteristic of the era, dependent upon the interests of copiests and manuscript dates differing by as much as 200 years. A few printed books are available: a Latin edition of his commentaries on the *Dietary of Isaac*, published in 1515, remains; *The Treasury of Health (Thesaurus Pauperum)* is available in Elizabethan English (6), and in modern Portuguese (7); the *De Oculis* (Eye Book) was translated into Italian and German in the 19th Century (8).

Some of his medical writings seem strange today, but they must be taken as representative of his time; they were written by a very serious and broadly successful scholar. He thought deeply and wrote extensively about important medical and philosophical problems. We have much to learn from Peter and his medicine, but not lessons of forgotten techniques or lost concepts of therapy.

Peter presents the puzzle characteristic of the middle ages, most evident in science and medicine. How did people of genius become almost frozen in time, yet remain busy and creative in their scholarship? The freeze did not occur overnight, nor did the thaw occur suddenly when it came. But its duration had been at least 1100 years by Peter’s time in the 13th Century.

The first approximate answer is that the medievals were overwhelmed by the force of authority, whether Galen, Aristotle, Hippocrates, the Church or the King. Perhaps the absolutism of Roman authority was still a remembered tradition. Certainly we are quite the opposite. We tend to reject or at least question authority even when logic suggests acceptance. Peter and others of the era, though awash in authority and tradition, were beginning to question the validity of the

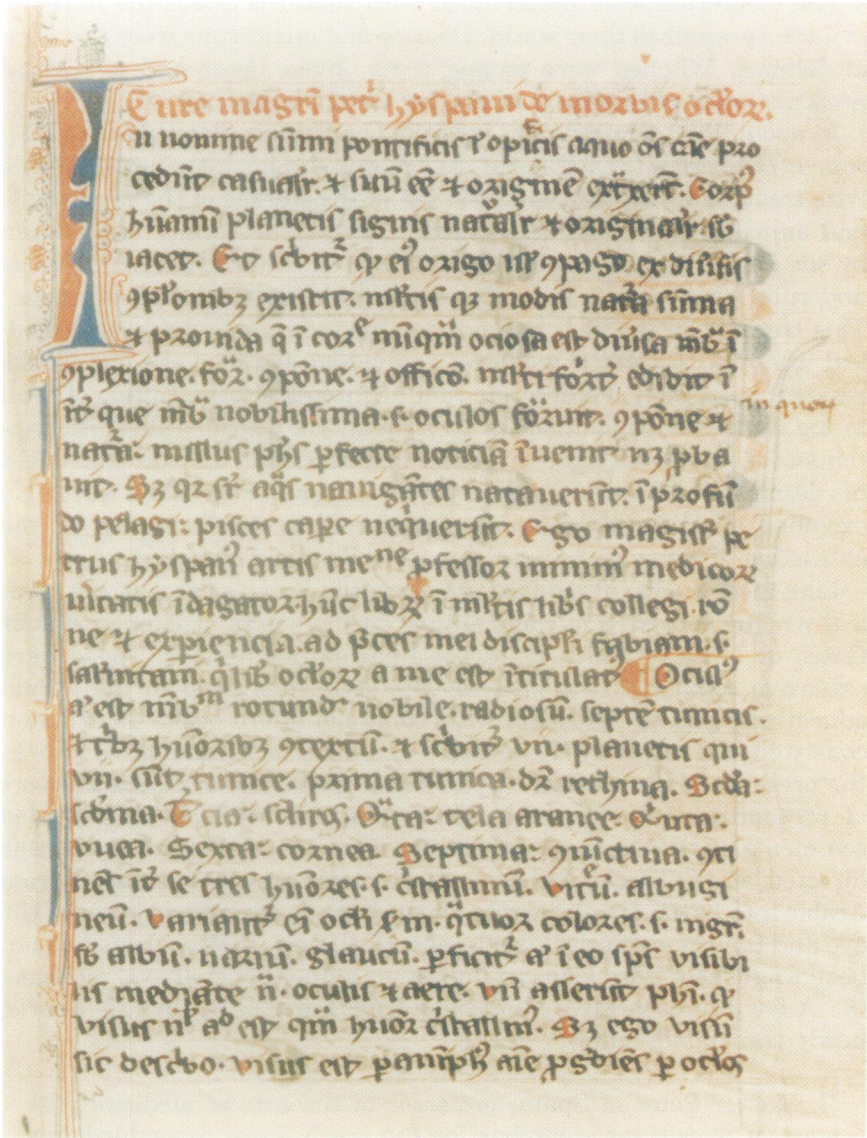


FIG. 1. MS Hunter 342, folio 63r Glasgow University Library, Department of Special Collections.

medical dogma which guided them. Though there were some hints of the future, their texts and prescriptions seem firmly fixed in the past, perhaps modified by their own experiences.

The medievals were preoccupied with concerns about the forces of evil ever present in their world. Disease and misfortune were the work of demons. Witches were among them. Even Peter had a medical prescription to rid patients of the curses of witches (6).

In about 1550, Humphree Loyde of London translated Peter's *The-saurus Pauperum* (6) and noted the following in his introduction: "This lytle treatyse which was gathered out of the workes of the most noble and auncient phicicions, Hipocrates, Galene, Dioscordes, and Avicen by one Petrus Hispanus whyche (although he chaunced in a barbarous and rude tyme) was a man of great knowledge and large practyce." This treasury of the poor was written for incompletely schooled medical workers. It was the medieval equivalent of one of the handbooks residents use today. Peter wrote that he intended a description of head to toe disease with methods of treatment. He provided brief descriptions of diseases with prescriptions for treatment. Loyde translated his description of warts quite simply: "every man knoweth a wart." He excluded all surgical treatments except for a brief chapter on the extraction of arrows.

Like most medieval medical scholars, the greatest part of his medical writing consisted of commentary on the works of Hippocrates or Galen or Isaac or Rufus or others from earlier periods. These were extensive commentaries following the style then used in the formal educational process. Most students could not afford books. Instruction consisted of lectures by the masters and discussion among masters in the presence of the students. Peter's commentaries represent this sort of presentation: his personal observations as well as his recorded comments on the works of early authorities. Much of his attention was directed at the work of the classical period newly translated from Arabic into Latin. He also wrote an eye book describing diseases of the eye and their non-surgical treatment. Until now, this eye book has not been Englished. It provides an important glimpse of medieval medicine (8). A few representative quotations from Peter of Spain's *De Oculis*, newly translated, follow:

"I, Master Peter of Spain, professor of the arts of medicine, the least of physicians, searcher for the truth, have assembled this book from many books from reason and from experience at the request of my student, Fabinius of Salerno."

"The human body is naturally and originally subject to the planets and signs and it is written that its origin and structure have arisen from the highest natural cause which gave it shape and builds its parts in combination. Among the very special parts

are the eyes about which no philosopher has perfect understanding. Yet those who have floated on the navigable waters are unable to grasp the depth of the ocean either."

Here Peter acknowledged the role of the planets in the control of health and medicine. Throughout medieval medicine, astrologic interpretation was crucial. Further, he noted that "no philosopher has perfect understanding." Medieval science was developed from the thoughts of philosophers, not experimental biologists.

"The eye is a noble part, round and gleaming, surrounded by seven tunics made of three humors. It is written by the seven planets that there are seven tunics of the eye. Perfected within them is the Spirit of Vision in between the nature of the eyes and air."

Considering that the microscope had not been invented and human dissection had not been allowed for centuries, Peter's concepts of eye anatomy and anatomy of the eye muscles was surprisingly accurate. Much was probably based on the pig anatomy taught in Salerno for 100 years before Peter.

"Whereas philosophers assert that vision is nothing but the crystalline humor (the lens), I describe vision this way. Vision is the bridegroom of the soul going forth from the eyes as from a candelabra, by which the sensitive and intellectual powers describe color and figures."

Peter was following the thoughts of the early Greek philosophers, Empedocles and later Plato, who felt that vision was dependent upon a flame, a spirit which arose in the brain passed through hollow optic nerves and out the eyes to touch the environment. It then returned to the eye with the sense of vision (9). Peter was also close to the theory of St. Augustine whose notion of sensation required two participants; a sense organ had to be affected by external forces but the act of sensation could be attributed to the soul alone (1). Had Peter been more a disciple of Aristotle, he would have said that light arises from objects and enters the eye to stimulate vision.

"A useful salve for the eyes; sugar, unpierced pearls, white lead, opium, all made into a fine powder with egg white and slice of pepper and dissolved with urine. Another useful material for washing the eye is made from the milk of an ass and the milk of a

woman nursing a girl child. If black bile, yellow bile or watery humors are a problem, pure silver calamine, aloe, red and white sandalwood and oriental saffron made into a powder and placed with coriander juice, endive juice and rosewater in the open air during day and night in a flask to warm under the sun. Finally, one drop is placed in the eye by which the disease leaves as if by miracle. For many conditions, a blood letting in the veins under the elbow which are known only to the Spaniard (Peter) is most useful. A cleansing eye wash is pomegranate, juice of wood sorrel, sugar, white wine in equal parts used three times a day. Another eye wash should be made from the bile of swallows and partridges mixed with fennel root juice. When this is used, the patient should be warned from motion of the eyes and too much sex."

Peter described another eye condition, dacryocystitis with fistula, a condition which he deemed to be untreatable, even though it had been treated with cautery or incision for 1200 years (10) and his contemporary, Theodoric the surgeon, had described a surgical treatment (11). Peter recommended that a leaf of sage be placed in the fistula and another bound to the right foot with the skin of a snake. Then three times the physician should say, "Just as Christ descended from heaven into the uterus of a virgin so may this problem descend from the eye to the foot."

"For the cure of itching of the eyes, rosemary and thyme should be placed in white wine and set aside three days and three nights and then placed in the eye. Or take rock salt and boil it in water. Afterwards, you should cleanse the eye with water or take root of fennel and swallow-wart repeatedly pounded and placed in the eye during the day. Another is a soup of marrow bone to which wine and a little juice of celery are added. This can be placed over the eye frequently. However, the best remedy is as follows: Take the urine of a fasting virgin boy and white wine in equal parts and boil in a new pot with rue, sage, and fennel. Place this in the eye. Another method proven by the Spaniard's own experience is powdered excrement of a child placed in the eye. Sleeping with the shoes on is very bad for the eyes."

"For loss of the eyebrows, a paste of wolf droppings smeared on the brow. Wolf droppings are so powerful that hair will almost grow on them alone."

"Clothing helps the eyes; hand clothes and other clothes ought to be green. Under garments are to be black. Rooms in which there

are patients ought to be green. Beds ought to be green and pleasant to the light. Constantine has observed thus: The color black gathers and white scatters."

"These things are harmful to the eyes: fumes, legumes, spicy foods, wine, garlic, vinery, pepper, sleeping with the shoes on, prolonged sitting before the fire, cheese and milk, floury food, unleaven bread, immoderate weeping, cabbage, meat of cows and pigs. Looking at white things in bright sunlight. Sex with little old women or during menstruation. To read for long times through new books, hunger and fasting."

"Frequent small phlebotomies of blood from a vein which is at the elbows strengthens the eyes. Moderate phlebotomy from the saphenous vein and a large one from the vein of the thumb is of more value. One from the vein of the head of great use. The usefulness of phlebotomy is in youth and extends to the fortieth year. It has been found that phlebotomy is not useful after the fiftieth year."

The medieval use of phlebotomy was extensive and quite "Greek." It was even used to ward off illness in healthy people. Some monasteries even established schedules for regular phlebotomy of its healthy people. Since the circulation of the blood was not yet known, medieval physicians prescribed phlebotomy from specific veins for specific disorders.

Peter's medical writing and the writing of others of the period is rich with prescriptions of this sort. An initial modern reaction suggests that Peter and his contemporaries were wildly imaginative quacks. Not so; their prescriptions were based on ancient authority handed down for more than 1000 years. The medieval pharmacopeia is almost exclusively fragrant and colorful with herbs, animal parts and fluids, and metallic and earthy powders. The use of milks, urine, bile, and dungs was most important. These preparations were not new to medicine. The same pharmacopeia is described in Pliny's *Natural History* (12) and in Celsus' *De Medicina*. The extensive work of Dioscorides outlines an entirely similar array of preparations (13). All three of these were at least 1,000 years old by Peter's time. Certainly Dioscorides and Pliny were available to him, though the works of Celsus had been misplaced and, except for fragments, not rediscovered until 1443. Many of these herbal remedies are still to be found in folk medicine, still with putative properties traceable to ancient times (14–15). Their fragrance, taste and colors have made many important contributions in flavors and perfumes.

During the interval between Dioscordes and Peter, these elaborate preparations had never been subjected to clinical trial. Even though Galen had been concerned about clinical truths, like the empiricists, he believed physicians had to rely on experience to determine what was true, what worked and what did not (16). The concept of a simple clinical trial, with a control group, had eluded even Galen.

Physicians of the 13th Century were most commonly churchmen. Certainly the scholar-physicians of western Europe were all churchmen. Physicians in high church office were not uncommon, though only Peter became Pope. The Church regulated medical education; bishops licensed physicians; regulation was intrusive. A canon of the Second Lateran Council (1139) forbade monks to study medicine for temporal gain. The document said that the practice of medicine would distract them from their principal aim. Furthermore, the Church was uncomfortable that medicine required a frightening and frequent contact with women (17). In 1215, Innocent III required that those seeking medical care must first seek the care of a doctor of the soul, since the soul was more important than the body. The use of medical witchcraft was also forbidden (17). The same year, based on a canon of the Fourth Lateran Council, Innocent III decreed no churchman could perform surgery, by knife or cautery. A hundred years later, medical graduates at Paris still promised never to do surgery (18). A similar promise is in the Hippocratic oath.

Many physicians of the era were highly educated. Some wrote extensively; those manuscripts are still available. In his own writing, Peter carefully avoided the description of surgical methods even though he knew about them. He persisted in describing medical treatments for conditions for which surgery was available. It is not clear whether he was simply following Church edict or whether his own thoughts about the risks and successes of medieval surgery kept such recommendations out of his writings. He did not condemn surgical treatments, he just ignored them. Exceptions to the prohibition against surgery were allowed to some. Theodoric, the surgeon, became a bishop, and de Chauliac was also a priest.

The most important medical scholarship of the 12th and 13th centuries was translation. This was the period when the great translators, Constantine of Africa and Gerard of Cremona, were bringing large quantities of more ancient material into Latin. Some was translated directly from Greek, but more usually it had been earlier translated from Greek to Arabic or Syriac and now from Arabic to Latin. The rediscovery of extensive works of Galen, Hippocrates, Rufus, Isaac as well as Rhasis and Avicenna stimulated a flow of written commentary.



Aristotle was rediscovered. During Peter's early education in Paris, Aristotle had been officially banned, though often studied. Within a period of 50 years, the University of Paris moved from banning Aristotle to tolerating Aristotle to requiring Aristotle to reexamining and banning parts of Aristotle. Peter himself as John XXI issued a Bull, *Relatio nimis implacida*, requiring the Bishop in Paris to reexamine teaching at the University to determine if it was contaminated by dangerous and non-Christian naturalism (19). Following this hurried examination, segments of the curriculum of the Arts faculty were banned; a few of the masters lost their positions. These condemnations followed some the rest of their lives.

The newly translated material brought renewed stimulation to western medicine. The concepts were old, but new to Europe. Western medicine put the older Greek medicine into practice and accepted it whole. Scholars became absorbed in commentary on those works. Peter's commentaries were among the most insightful.

Peter was a broad scholar of logic and theology as well as medicine. This bundling of seemingly different attitudes and information is foreign to the 20th Century, but was a general phenomenon of the 13th Century and earlier times. Empedocles was a philosopher-physician. Plato was fascinated by science. Aristotle developed a wide range of concepts of biologic and physical science. Avicenna was a physician-philosopher. Albertus Magnus, Roger Bacon, and Peter of Spain wrote extensively in many fields and found no difficulty in bridging what is a chasm for the 20th Century. Perhaps this unity of philosophy and medicine tied medicine into the mainstream of 13th Century scholarship, but it also restricted independent creative development in medicine. The writing of the surgeons, Theodoric and de Chauliac, seems much more original and creative. Though both were churchmen, they were not burdened by the scholasticism that weighed heavily on Peter and other physicians.

In the 13th century, reason moved both science and the Church one small step at a time to positions which now show evident unreality. One might envision scholars of the period building a bridge across a large river. Starting from one end, the bridge became more curved as it grew, and finally it did not reach the other shore at all, or at least not near the road under construction there. It scarcely occurred to them that they should test their work against reality, and not only against prior authority or their own experience, and that a bit at a time.

More recently, medicine and science have advanced because of the continuous stimulation of external knowledge, such as biochemistry or molecular biology. In the 13th Century, that external science was

astrology, misguided and flawed, but thought to be supported by Aristotle, who wrote that everything under the moon was influenced by the planets (20).

Peter's eye book illustrates the profound dependence of 13th Century medicine on prior authority, unproven, but accepted. More broadly, science in general was also dependent upon the thoughts of more ancient philosophers. This dependence led to the influence that astrology was to exert over science and medicine. It became like the bridge too crooked to reach the shore. Furthermore, the authority of Hippocrates or Galen seemed absolute, at least in public expression. The prime sources of new thought were debate on the meaning of ancient authority and the experience of the articulate physician-scholars of earlier ages.

Why had the 1200 years between Celsus and Peter of Spain not provided the growth and development that might be expected from people of such intelligence, even genius?

Certainly 13th Century medicine was hobbled by lack of technical advance, e.g. the microscope, human dissection, and experimental physiology. But, more important, medicine like other science had not yet learned to question and seek answers directly through organized research, either in the physical or biological sciences. New information was dependent upon translation and better understanding and debate about the past, not hypothesis formulation or testing. Experience led to resolution of clinical questions. The arguments of philosophers resolved issues of science. Yet clinical trials do not require high tech equipment, just a state of mind satisfied only by organized inquiry. Why had these creative people been so dulled for a thousand years? And more to come? Why did they not simply record the natural course of untreated disease and compare that with the effects of their treatments?

The answer is complex. Diagnosis was based on symptoms and signs rather than pathophysiology or molecular probes. Hence a medieval diagnosis included more than one disease, all making the study of natural history of disease confusing or impossibly varied. Trachoma had many faces, and each face was identified as a separate disease, grouped with like faces of yet other diseases. Some of those diseases were self-limited. Given such lumped diagnoses, some good results could be gotten with any treatment or with none, but this comparison with control groups was not made.

The low general level of education, poverty, short life spans were characteristic of the time, not just western Europe. The emphasis on the soul and its salvation was dominant in Europe as well as the

Muslim world. If the condition of the soul was of prime importance, all other intellectual activity was diminished in significance. Whatever the cause of this lack of inquiry and creativity, a major change of values was required before medicine could move beyond its past into the future that awaited. The medieval physician used information based on remote authority. If he got a bad result with a given patient, he knew it was the will of God, or perhaps he had misunderstood the writings of the past and misapplied them. The proper corrective action was prayerful study and discussion about those writings of prior authority, particularly Hippocrates and Galen. This affliction of the medieval mind was more than conservatism; it was a dulling assertion that those more ancient knew and had already described what was important. The recognized geniuses of the past could not be improved upon, only interpreted. Thus, medicine lay frozen in the classical period for more than a thousand years. The medieval mind had not yet turned to organized trial; it depended upon individual experience and upon a faulty external validation, astrology; and it was subject to tight regulation by a super powerful and interested governing body, the Church.

However, Peter of Spain, who was also a major philosopher, a logician, had begun to worry about the logical basis of medical truth. He often cited "experimentum" as the authority for a mode of treatment. That is to say "experience"; he did not mean "experiment." In his commentary on the *Dietary of Isaac*, he differentiated reason alone or experience as sources of clinical truth. He felt they must be combined. Further, he began to develop a concept we now expect of clinical research (Figure 2). To determine efficacy of a drug, first, the medicine administered should be free from all foreign substance. Second, the patient taking it should have the disease for which it is intended. Third, it should be given alone, without other medicines. Fourth, it should be of the opposite degree to the disease (i.e. hot vs cold). Fifth, it should be tested not once but many times. Sixth, the experiments should be on the proper body, the body of man, not an ass (21). Several of these conditions were impossible to achieve in the 13th Century. Certainly, purity of a medicine could not be attained when whole plants or animal secretions were used. Diagnoses were not specific. There was no thought of a control group. Even Peter's formulation was not used until Ambrose Pare's study of gun shot wounds 300 years later.

The lessons to be learned from medieval medicine are several. Most important, they were mistaken in thinking that past authorities knew all that was important to know. There was much that could have been

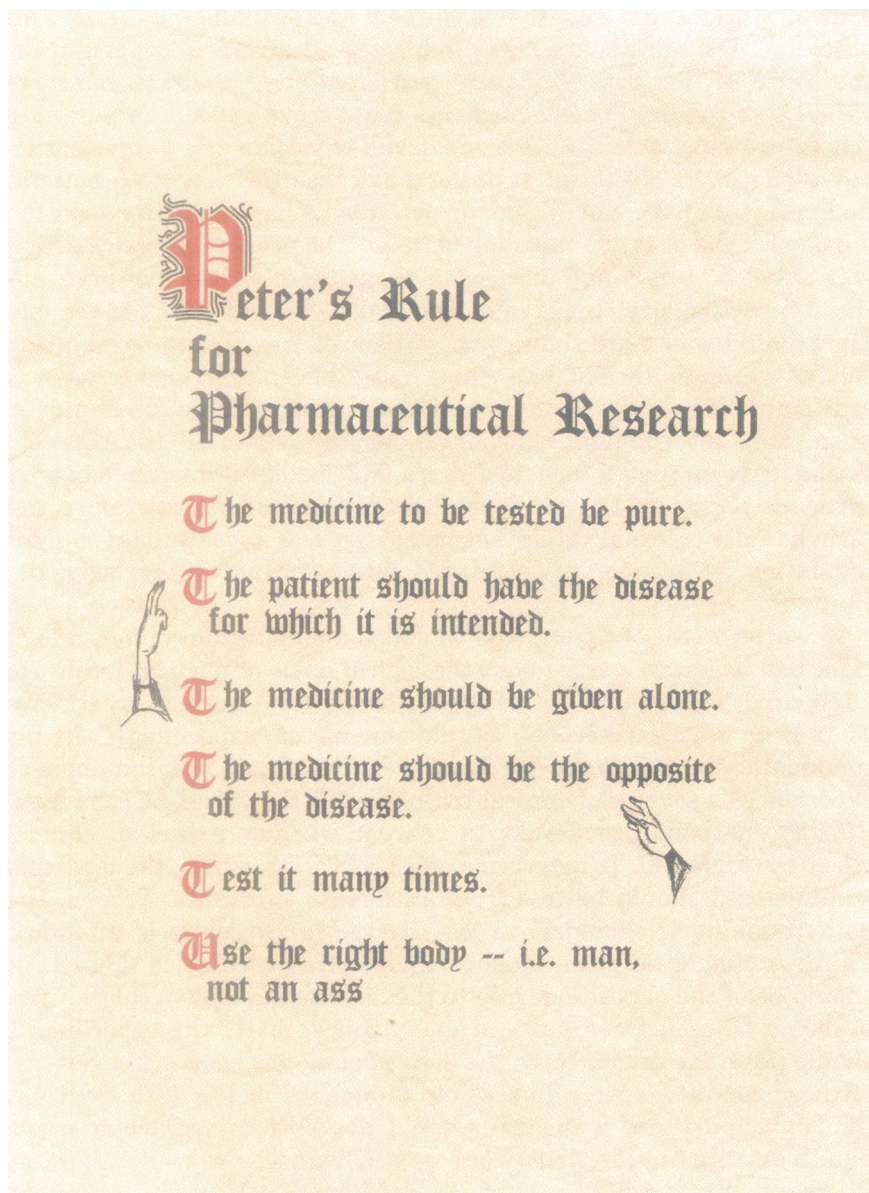


FIG. 2. Peter's Rules for Proving Efficacy. Thorndyke, L. *History of Magic and Experimental Science*. Vol II, p. 509. The margin decorations are representative of those added by readers to various manuscripts through the centuries. On some, hands or fingers were used to point to important parts.

discovered only through organized research. So it is still today. In the emerging era of ever greater restraints of clinical expenditure, it is crucial, even vital, that patient-centered, controlled clinical research be fostered and protected.

Next, it is ever important that medical theories and practices continually seek external fertilization and validation by the best of biologic and physical science. The medievals leaned on astrology. We should know that clinical science can be no better than the sciences which it uses, whether biological or statistical.

And finally, it is essential to recognize society's historical interest in modifying and regulating medical science and practice. This interest only emphasizes the importance which society has attached to medicine through the ages. However, that regulation whether motivated by economies or religious zeal has a long history of stifling and destructive effect. The medieval physicians were so regulated and so controlled for so long that they themselves became part of the intellectual problem. Today, we are entering a period of needed control of expenditure. It is also a period of reemerging alternative medicine with schemes based on anecdotal information rather than organized research. Religious dogma finds political expression again. The drive for economy and alternative medicines reflect societal dissatisfaction and frustration. The medieval response was to reject change, to rely on past authority, and to suppress dissent. We should develop our own truths from careful research.

One can describe the eras of medical history by outlining changes in the management of uncertainty. The medievals found security in dogma rather than the science of organized trial and information.

Medicine was not cloistered from the rest of society in the middle ages, nor is it now. The medieval mind had certainly learned to walk upright. It was creative, but creative within the limits of established belief. Thought beyond those limits was punishable. That was an era of conspicuous dogma and oppressive control by Church and king. The Inquisition and the accusation of heresy were pervasive threats of the late middle ages. The principal lesson from Peter's medicine is that regulation and dogma stifle; even people of genius become trapped in a past made comfortable by authority.

Medieval medicine is a mile post in the course of evolution of intellectual processes and society. It simply cannot be explained except as a reflection of the society of which it was a part.

Today it is easy to identify a need to reconcile the possibilities of science with the restraint of dogma and resource limitation. The medieval problem was quite similar. Our solutions need to be better.

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## DISCUSSION

**Toole**, Winston-Salem: It occurred to me that a physician becoming a Pope would have a conflict of interest. When a patient comes to him, would he pray for the patient or try to intercede? If the intercession did not work, would he attribute it to the fact that his prayers were ineffective, or that the patient had sinned, or what explanation might he give if in that situation?

**Daly**: First of all, he had no conflict of interest because the two were so close together that they were indistinguishable. The requirement of Innocent III that physicians see patients after the physicians of the soul was important, not because medicine was so risky, but because putting the soul in proper order was the most important thing. Furthermore, once that was done, they felt that medicine would work better anyway. There might be some logic in that, but anyway this was not a conflict. This was at a

period of time when the average life expectancy of a male at birth was twenty-eight years and for women slightly less than that. Death was an expected thing. Thus, the best treatment which one could expect was to prepare for the next world. Consequently, the physician who was simultaneously doing the good work of the church was amply well prepared to take care of both.

**Toole:** I've been accustomed to hearing about the laying on of hands for the King's Evil. There was a variety of saints (such as St. Vitus) whose purpose was to be prayed to specifically for one disease or another. Were those products of a later era or was that the extent at the time that the laying on of hands at the appropriate place, with the appropriate incantation, or other intercession would have a great power?

**Daly:** The laying on of hands by kings and otherwise came along a bit later. It was more important later in the middle age. It was very real to the Medievals. Of course, these were anointed ones who were simply transmitting the divine power to the people. There was another point which you made that I lost.

**Toole:** Praying to one or another special saints.

**Daly:** That would seem entirely appropriate to them at that time. Peter, in contrast to many medical writers, did not put incantations and prayers into his work, with one exception. I will pass it along. He described dacryocystitis with fistula as an untreatable disease. In truth, it had been treated surgically for a thousand years, but he, as a churchman, was forbidden to do that sort of thing and he didn't even mention it in his work. Rather, he had a prayer. He said the physician confronted with that circumstance should wrap a leaf of sage around the ankle, either ankle would do, and put a rolled piece of sage into the fistula and then say three times, "Just as Christ descended from heaven to the uterus of the Virgin, so may this disease descend to the ankle."

**Humphries,** Columbia: Where was Peter educated? In 1200, most of Spain was occupied by the Moors, but he turned out to be a Christian. Was his education by the Moors or by Christians?

**Daly:** The Moors were constricted to a lower part of Spain at that time. Actually, Peter was Portuguese and they sort of lumped Portugal together with the rest of the Iberian Peninsula and called it Spain. He was probably born in Lisbon. As a young man he went to the Cathedral school in Lisbon. That is known. There was no university in Portugal at that time and for reasons which are totally lost, he then went to Paris to the University. Without any questions, Paris was the greatest University of that part of the Middle Ages. This was a place where there would be three or four thousand students, but the theology and the philosophy were great and there was an outstanding medical school. It is not certain where his medical education took place. There are no records. It is thought that it was in Paris because he spent several years there. However, he clearly had some kind of connection with the medical school in Salerno and also with the one in southern France. Nor is it entirely certain in what form his medical education was. Certainly he heard lectures and arguments, but it is not entirely known how clinical experience was provided.

**Brown-Bollett, Audrey,** New York: You concentrated on the origin of western medicine and that the freezing in time that you alluded to was attributable to the concentration on the soul rather than the body. I wonder what was going on in Arabic medicine and in Chinese medicine during the same period. Were they frozen in time too? They wouldn't have the same concept about the soul, would they?

**Daly:** Yes and no. First of all, Islamic medicine also concentrated on the soul extensively. If one prepared correctly for the next world, Heaven was a delightful place, at least for the males. It was something really to be looked forward to. As to the Chinese, that is a little more difficult because the writing has not been passed down as well. Certainly there was a wealth of Chinese traditional medicine, which is still there. Now

the more interesting part is the Islamic medicine and its influence on the West. Of course, the transmission of the wealth of Greek medicine to the West by-and-large came by way of Arabs. The greatest translator, probably of all time, was a man named Hunan, a Nestorian Christian of the Greek part of the Eastern Mediterranean. He was brought up in an Arabic-speaking community. He translated vast amounts of Aristotle, Galen, Hippocrates, Rufus, and a variety of other people, the Dioscorides, into Syriac. His sons subsequently translated it into Arabic. In the ten and eleven hundreds, the biggest, hottest scholarship of the West was translation of that Arabic material into Latin. Much of what is taken for granted today as Greek philosophy passed by that route. Subsequently, it was indeed translated directly from Greek, but the original manuscripts went through Arabic first. The greatest of the Arabic physicians had died off by the thirteenth century, but their work was, indeed, heavily laced with the Greek traditions and was available by way of this complex translation route to the thirteenth century in Western Europe.